Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Inmarsat Mobile Networks, Inc.	)	File Nos. SES-LIC-20120426-00397, SES-AMD-20120823-00781, and SES-AMD-20150114-00008
	)	
Application to Operate a Fixed-Satellite Service Gateway Earth Station Facility in Lino Lakes, Minnesota with the Inmarsat-5 F2 Space Station	)	Call Sign: E120072

ORDER AND AUTHORIZATION AND DECLARATORY RULING

Adopted: March 30, 2015 **Released: March 30, 2015**

By the Chiefs, Satellite Division, International Bureau, and Policy and Rules Division, Office of Engineering and Technology:

I. INTRODUCTION

1. By this Order we grant the application of Inmarsat Mobile Networks, Inc. (Inmarsat) for authority to construct and operate a Fixed-Satellite Service (FSS) gateway earth station in Lino Lakes, Minnesota to communicate with Inmarsat's recently launched Inmarsat-5 F2 space station. Inmarsat-5 F2 will operate at the 55° W.L. orbital location under the authority of the United Kingdom.[1] At the same time, we grant Inmarsat's request for U.S. market access for the Inmarsat-5 F2 space station as provided herein, to operate in the 27.5-30.0 GHz band (Earth-to-space) and the 17.7-20.2 GHz (space-to-Earth) frequency bands, as set forth below. Accordingly, we deny the Petition to Deny filed by Iridium Satellite LLC. In addition, Eutelsat S.A. filed comments requesting that Inmarsat's application be conditioned or denied based on Eutelsat's International Telecommunication Union (ITU) priority at the 55.2° W.L. orbital location.[2] We decline to do so for the reasons explained below. This gateway earth station authorization and grant of market access, as conditioned, will allow Inmarsat to provide new communication services to U.S. consumers.

II. BACKGROUND

2. In 2012, Inmarsat filed an application to operate a gateway earth station in Lino Lakes, Minnesota using the 27.5-30.0 GHz (Earth-to-space) and 17.7-20.2 GHz (space-to-Earth) frequency bands to communicate with its planned Inmarsat-5 F2 space station, a geostationary orbit (GSO) FSS space station to be located at the 55° W.L. orbital location. Inmarsat requests waivers of the U.S. Table of Frequency

[1] Consistent with Satellite Division practice, with the release of this Order the Systems Analysis Branch will issue an authorization for Inmarsat's gateway earth station (Call Sign: E120072) incorporating this Order by reference and listing the standard conditions that apply to earth stations.

[2] Letter to Marlene H. Dortch, Secretary, FCC from Brian Weimer, Counsel for Eutelsat, S.A. (Jan. 26, 2015) (Eutelsat Comments).

Allocations to permit the Lino Lakes gateway to communicate with the Inmarsat-5 F2 space station.[3] Inmarsat seeks a limited waiver of Section 25.202(g) of the Commission's rules to allow it to operate telecommand carriers using center frequencies of 29.494 GHz and 29.468 GHz.[4] Inmarsat also seeks waivers of Sections 25.114(c) and 25.138(d) of the Commission's rules.[5]

3. The application was accepted for filing and placed on Public Notice.[6] In response, eleven entities filed comments supporting Inmarsat's request.[7] Iridium filed a Petition to Deny, in part.[8] Iridium, which operates a constellation of 66 non-geostationary orbit (NGSO) mobile satellite service (MSS) space stations in low earth orbit, objects to Inmarsat's proposed use of the 29.1-29.25 GHz and 19.4-19.6 GHz frequency bands because Iridium operates its gateway feeder links in the 29.1-29.3 GHz and 19.4-19.6 GHz bands.[9] Eutelsat, S.A. also filed comments on Inmarsat's application, stating it has higher International Telecommunication Union (ITU) priority for Ka-band frequencies at the nominal 55° W.L. orbital location.[10]

III. DISCUSSION

4. A U.S. earth station application requesting a non-U.S.-licensed space station as a point of communication often represents our first opportunity to evaluate whether the non-U.S. licensed space station complies with the Commission's legal, financial, and technical requirements.[11] The first earth station seeking to communicate with a particular non-U.S. licensed space station must therefore include the same detailed information about the space station and its operations that the Commission requires from U.S. space station applicants.[12] Accordingly, we will first consider whether the Inmarsat-5 F2 space

[3] Inmarsat Hawaii, Inc., IBFS No. SES-LIC-20120426-00397 (filed April 26, 2012) (Inmarsat Application), Exhibit A at 9, and Attachment A, Technical Annex at 1.

[4] 47 C.F.R. § 25.202(g).

[5] 47 C.F.R. §§ 25.114(c); 25.138(d); Inmarsat Application, Exh. A at 9.

[6] *Satellite Communications Services*, Public Notice, Report No. SES-01479 (Aug. 29, 2012). On January 14, 2015 Inmarsat filed a minor amendment to change the name on the application from Inmarsat Hawaii, Inc. to Inmarsat Mobile Networks, Inc. IBFS File No. SES-AMD-20150114-00008. In this order, we grant this application and refer to the applicant by its new name.

[7] These entities are: VT iDirect, Inc., GMPCS Personal Communications, Inc., TracStar Systems, Inc., American Airlines, Globe Wireless LLC, Skyware Global, GoGo LLC, Honeywell, The Boeing Company, ARINC Inc., and Encompass Digital Media, Inc.

[8] Iridium Satellite LLC, Petition to Deny, Filed Oct. 9, 2012 (Iridium Petition).

[9] Iridium states it has no objection, subject to successful coordination, to Inmarsat's request to use the 29.25-29.3 GHz band. Iridium Petition at 1.

[10] Eutelsat Comments.

[11] *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Service in the United States,* Report and Order, IB Docket No. 96-111, 12 FCC Rcd 24094, 24161-62 (1997) (*DISCO II Order*).

[12] All earth station applications that also seek market access for a non-U.S. licensed space station must include an exhibit containing the information required by Section 25.114 of the Commission's rules, 47 C.F.R. § 25.114, with (continued….)

station meets the Commission's legal, financial and technical requirements. We will then review the technical aspects of Inmarsat's proposed gateway earth station.[13]

A. Inmarsat-5 F2 Access Request: DISCO II Analysis

1. General Framework

5. The Commission's *DISCO II Order* implemented for satellite services the market opening commitments made by the United States in the World Trade Organization (WTO) Agreement on Basic Telecommunication Services.[14] These commitments allow new entrants and technologies into the U.S. markets, thus advancing the growth of satellite services around the globe. The *DISCO II Order*, therefore, included a framework under which the Commission considers requests for non-U.S. licensed satellites to serve the United States.[15] This analysis considers the effect on competition in the United States, eligibility and operating requirements, spectrum availability, national security, law enforcement, foreign policy and trade concerns. We discuss these below with respect to the Inmarsat-5 F2 space station.

2. Effect on Competition

6. In the *DISCO II Order*, the Commission established a rebuttable presumption that entry by non-U.S. space stations licensed by WTO Members to provide services covered by the U.S. commitments under the WTO Agreement on Basic Telecommunications Services will further competition in the United States. These commitments include FSS, but specifically exclude Direct-to-Home (DTH) service, Direct Broadcast Satellite Service (DBS), and Digital Audio Radio Service (DARS).[16] This

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respect to the proposed non-U.S. licensed space station. Section 25.137(b) refers to Section 25.114, which sets forth information requirements for U.S. space station operators. 47 C.F.R. § 25.137(b).

[13] In its market access application, Inmarsat explained that the Inmarsat-5 F2 spacecraft design supports a wide range of services to user terminals located in the United States in the 29.0-30.0 GHz (Earth-to-space) and 19.2-20.2 GHz (space-to-Earth) band segments, but also explained that such operations are not the subject of the its pending application. Inmarsat Application, Exhibit 4 at footnote 9 ("Inmarsat acknowledges that it or one of its customers would need to obtain separate authority for such user terminals. Inmarsat also acknowledges that it may potentially be necessary to employ suitable sharing techniques to ensure the compatibility of user terminals in certain bands with other licensed operations."). Our action here is without prejudice to any action the Commission may take on user terminals seeking access to Inmarsat-5 F2. *See* ISAT US Inc., IBFS File Nos. SES-LIC-20140224-00098, SES-AMD-20140715-00601, SES-AMD-20150211-00073, and SES-LIC-20141030-00832.

[14] *DISCO II Order* 12 FCC Rcd 24096.

[15] *Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order and Further Notice of Proposed Rulemaking in IB Docket No. 02-34, and First Report and Order in IB Docket No. 02-54, 18 FCC Rcd 10760, 10867-68 (2003) (*Space Station Licensing Reform Order*), *citing DISCO II*, 12 FCC Rcd at 24173-74.

[16] The U.S. commitments specifically excluded "one-way satellite transmissions of DTH and DBS television services and of digital audio." United States exceptions can be found at http://transition.fcc.gov/ib/pd/md/wto/condoffe.pdf; *DISCO II*, 12 FCC Rcd at 24099 ("We find that circumstances that existed when the Commission proposed to adopt an ECO-Sat test have not changed sufficiently with respect to Direct-to-Home (DTH) services, Direct Broadcast Satellite (DBS) services, and Digital Audio Radio Services (DARS). Commitments made as part of the WTO Basic Telecom Agreement were not sufficient to enable us to adopt a presumption of entry for these services. We will apply the ECO-Sat test to applications to provide these services through all foreign satellite systems, whether or not they are systems of WTO Members.").

means that we presume that WTO-member licensed satellites providing WTO-covered services satisfy the competition component of the public interest analysis.

7. In this case, the presumption in favor of entry applies to Inmarsat-5 F2, which will operate under the supervision of the United Kingdom, a WTO Member. Nothing in the record rebuts the presumption that Inmarsat-5 F2's entry into the U.S. market is pro-competitive. Inmarsat, however, did not provide an analysis with respect to non-covered services. As a result, the scope of this grant does not include provision of DTH, DBS, or DARS in the United States.

3. Spectrum Availability

8. In the *DISCO II Order*, the Commission determined that, given the scarcity of geostationary orbit locations and spectrum resources, it would consider spectrum availability as a factor in determining whether to allow a non-U.S.-licensed space station to serve the market in the United States. This is consistent with the Chairman's Note to the WTO Agreement on Basic Telecommunications Services, which states that WTO Members may exercise their domestic spectrum/frequency management policies when considering foreign entry.[17] Thus, in the *DISCO II Order*, the Commission stated that when grant of access would create interference with U.S.-licensed systems, it might impose technical constraints on the non-U.S.-licensed system's operations in the United States or, when conditions cannot remedy the interference, deny access.

9. Inmarsat proposes to use the 27.5-30.0 GHz (Earth-to-space) and 17.7-20.2 GHz (space-to-Earth) frequency bands. Some of these frequencies are not allocated for GSO FSS networks in the United States. As a result, Inmarsat requests waivers of the U.S. Table of Frequency Allocations and the Ka-band Plan[18] to permit operations in the United States.[19] In the following paragraphs, we discuss whether the proposed frequencies are available for Inmarsat's proposed use in the United States and address applicable waiver requests. The discussion of spectrum availability is organized by the use requested by Inmarsat (uplink or downlink) and the designated use contained in the U.S. Table of Frequency Allocations and the Ka-band Plan.

a. Uplink Frequencies Requested and Ka-band Plan Designation

10. *Primary GSO FSS Uplink*. The Commission designated the 28.35-28.6 GHz and the 29.5-30.0 GHz frequency bands for GSO FSS (Earth-to-space) on a primary basis.[20] Inmarsat-5 F2's

[17] Chairman of the World Trade Organization Group on Basic Telecommunications, Chairman's Note, Market Access Limitations on Spectrum Availability, 36 I.L.M. at 32.

[18] For the purposes of this Order, the "Ka-band" refers to the Earth-to-space (uplink) frequencies at 27.5-30.0 GHz and the corresponding space-to-Earth (downlink) frequencies at 17.7-20.2 GHz. These bands have been segmented for, and shared by, several types of communications systems, including NGSO MSS feeder links, terrestrial FS, FSS, and the Local Multipoint Distribution Service (LMDS). The Commission issued a series of Orders addressing the Ka-band Plan: CC Docket No. 92-297; IB Docket No. 98-172; and IB Docket No. 92-297.

[19] Inmarsat Application, Exhibit A at 9, and Attachment A, Technical Annex at 1.

[20] *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, Third Report and Order, CC Docket No. 92-297, 12 FCC Rcd 22310, 22326 (1997). Stations operating in primary services are protected against interference from stations of "secondary" services. Stations operating in a secondary service cannot claim protection from harmful (continued….)

proposed GSO FSS operations comply with this designation. Inmarsat notes that earth stations transmitting to the Inmarsat-5 F2 space station's operations will comply with the uplink off-axis EIRP density levels in Section 25.138 of the Commission's rules. Consequently, since there is no other GSO FSS licensee or market access grantee operating in the 28.35-28.6 GHz and the 29.5-30.0 GHz frequency bands less than two degrees of 55° W.L., these frequency bands are available for use by Inmarsat-5 F2 on a primary basis.

11. In the 29.25-29.5 GHz frequency band, the Commission established a co-primary designation for GSO FSS systems and NGSO MSS feeder links to share the band.[21] Inmarsat states its proposed operations will not adversely affect NGSO MSS feeder link operations currently licensed by the Commission.[22] Iridium is the only NGSO MSS network operating in the shared band that is a U.S. licensee or has been granted market access to the U.S. Iridium does not object to Inmarsat's operations in the 29.25-29.3 GHz frequency band.[23] Consequently, the Inmarsat-5 F2 space station may use the 29.25-29.5 GHz (Earth-to-space) frequency band on a co-primary basis shared with NGSO MSS feeder links.

12. *Secondary GSO FSS Uplink.* In the *Ka-band Report and Order*, the Commission designated the 27.5-28.35 GHz frequency band for LMDS on a primary basis with GSO FSS or NGSO FSS systems permitted to operate on a secondary basis for the purpose of providing "limited gateway-type" services.[24] Inmarsat proposes to use the 27.5-28.35 GHz bands on a secondary basis for gateway operations.[25] No comments were filed opposing this request. We determine that Inmarsat-5 F2 may use the 27.5-28.35 GHz frequency band for its Lino Lakes gateway operations on a non-interference basis with respect to LMDS, and Inmarsat may not claim protection against harmful interference from LMDS operators.

13. The Commission designated the 28.6-29.1 GHz frequency band for NGSO FSS on a primary basis with GSO FSS on a secondary basis. Inmarsat provides a technical analysis demonstrating that its proposed operations in this band will not cause interference to O3b Limited and would not have

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interference from stations of a primary service. "Co-Primary" services have equal rights to operate in particular frequencies. *See* 47 C.F.R. §§ 2.104(d) and 2.105(c).

[21] *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, CC Docket No. 92-297, First Report and Order and Fourth Notice of Proposed Rulemaking, CC Docket No. 92-27, 11 FCC Rcd 19005, 19034 (1996) (*Ka-band Report and Order*). Rather than the usual first-come, first-served approach to co-primary services, the Commission adopted a coordination framework proposed by industry. *Id.* at 19034; 47 C.F.R. §§ 25.203, 25.258.

[22] Inmarsat Application, Exh. A at 7; Technical Annex at 48.

[23] Iridium stated that it has no objection to Inmarsat's request for its gateway earth station to transmit in the 29.25-29.3 GHz band subject to successful completion of coordination. Iridium Petition at 1. Iridium subsequently informed the Commission that it had completed coordination for the Lino Lakes earth station in the 29.25-29.5 GHz frequency band. Letter from Donna Bethea Murphy, Vice President, Iridium, to Mindel De La Torre, Chief, International Bureau, Federal Communications Commission (June 13, 2013).

[24] *Ka-band Report and Order,* 11 FCC Rcd at 19025.

[25] Inmarsat Application, Exh. A at 7-8, Technical Annex at 53. Inmarsat's application contained a coordination analysis with respect to LMDS operations. *See* Inmarsat Application, Exh. C, Ka-band Earth Station – Lino Lakes, MN Frequency Coordination Report 28 GHz, Prepared by Comsearch.

caused interference to two other NGSO FSS systems previously authorized by the Commission, but which never became operational.[26] Inmarsat also states in its application that it will coordinate with current and future NGSO FSS licensees in this band, will cease operations in the event of harmful interference into NGSO FSS operations, and will accept interference from NGSO FSS systems in this band. O3b Limited, the only NGSO FSS system with U.S. market access operating in these bands did not file comments in this proceeding, nor did any other commenter address this point. We find that the 28.6-29.1 GHz band is available for use by Inmarsat-5 F2 on a secondary basis with respect to primary NGSO FSS operations. Transmissions to the Inmarsat-5 F2 space station from Inmarsat's Lino Lakes gateway earth station must comply with any interference criteria the Commission may adopt for GSO FSS systems operating in this band. As a secondary user, Inmarsat's proposed use of this band is also conditioned on Inmarsat accepting interference from any station authorized to operate in this band on a primary basis, and that Inmarsat's operations shall terminate upon notification that they are causing harmful interference to any such system.

14. *Uplink with No GSO FSS Designation*. The Commission designated the 29.1-29.25 GHz frequency band for LMDS transmissions, in the hub-to-subscriber direction, on a co-primary basis with NGSO MSS feeder links.[27] There is no GSO FSS designation in this band in the United States.

15. Inmarsat states that for the 29.1-29.25 GHz frequency band, its sharing techniques will be based on the same approach for co-primary operations for NGSO MSS feeder link stations and GSO FSS stations sharing in the 29.25-29.5 GHz frequency band.[28] The coordination approach established by the Commission in the 29.25-29.5 GHz frequency band requires compromise on the part of both GSO FSS and NGSO FSS operators in terms of technical operations.[29] Inmarsat's application contained a coordination analysis with respect to LMDS operations.[30] In addition, Inmarsat provided an analysis that concludes that interference from the Lino Lakes gateway into LMDS receivers is unlikely given the low probability that a receiver would be deployed in close proximity to the gateway and in alignment with gateway transmissions. Moreover, shielding and other interference mitigation techniques could be employed at the gateway to protect LMDS receivers.[31]

16. Iridium, a U.S.-licensed NGSO MSS operator in the 29.1-29.25 GHz band, objects to Inmarsat's proposed use of the band. Iridium states that Inmarsat has offered no rationale for why the Ka-

[26] Inmarsat Application, Exh. A at 9.

[27] Inmarsat Application, Technical Annex at 42-46.

[28] Inmarsat Application, Exh. A at 13.

[29] *Ka-Band Report and Order*, 11 FCC Rcd at 19034. Provisions pertaining specifically to authorizations and inter-system coordination in the 29.25-29.5 GHz band are set forth in Sections 25.258 and 25.203 of the Commission's rules, 47 C.F.R. §§ 25.258, 25.203. While the issue was resolved by the parties, the technical reports filed in Call Sign: E060445, IBFS File Nos. SES-MFS-20120322-00290, and SES-AFS-20120426-00396, illustrate the technical challenges raised by coordination between NGSO MSS feeder links and GSO FSS earth stations.

[30] *See* Inmarsat Application, Exh. C, Ka-band Earth Station – Lino Lakes, MN Frequency Coordination Report 28 GHz, Prepared by Comsearch.

[31] Inmarsat Application, Exh. A at 54-58.

band frequency plan should be revisited.[32] Granting the application, Iridium maintains, would effectively modify the frequency band plan by giving GSO FSS systems access to spectrum the Commission previously decided should not be used by these systems on a primary or secondary basis.[33] It further states that Inmarsat's proposed use of the 29.1-29.25 GHz band presents an interference risk to Iridium's system.

17. Inmarsat states that the geographic location of the Lino Lakes gateway is far from Iridium's gateway locations, providing spatial isolation sufficient to allow Inmarsat's use of the band without causing harmful interference to Iridium's system. Inmarsat's technical analysis supports this conclusion. Therefore, we grant Inmarsat's request to operate in the 29.1-29.25 GHz band on a non-interference basis to MSS feederlink and LMDS operations. Accordingly, Inmarsat must cease operations in the event of any interference into LMDS or MSS feeder link operations.[34] In addition, Inmarsat may not claim interference protection from LMDS or MSS feeder link operations in this frequency band.

18. We do recognize, however, that widespread deployment of GSO FSS earth stations transmitting in the band 29.1-29.25 GHz may cause harmful interference to Iridium or LMDS and may not be compatible with the deployment of new Iridium earth stations or LMDS stations. This is the first GSO FSS earth station the Commission has authorized to operate in this frequency band. Any future Commission grant for GSO FSS use of the band will consider the aggregate effect on Iridium and LMDS and will not be approved based only on the interference caused by the new earth station(s) being proposed.

b. Downlink Frequencies Requested and Ka-band Plan Designation

19. *Coordination with Federal Systems*. Inmarsat proposes earth station communications with the Inmarsat-5 F2 space station using the 17.7-20.2 GHz (space-to-Earth) frequency bands. We note that both Federal and non-Federal GSO and NGSO FSS systems operate in the 17.8-20.2 GHz frequency band.[35] Non-Federal systems must be coordinated with these Federal systems in accordance with footnote US334 to the U.S. Table of Frequency Allocations.[36]

20. *Primary GSO FSS Downlink*. The 18.3-18.8 GHz and 19.7-20.2 GHz frequency bands are designated for GSO FSS use on a primary or exclusive basis.[37] Inmarsat-5 F2's proposed GSO FSS operations comply with this designation. Inmarsat further notes that the Inmarsat-5 F2 space station's operations comply with the downlink power flux density (pfd) limits in Section 25.138(a)(6) of the Commission's rules.[38] Because there is no other GSO FSS licensee or market access grantee operating in

[32] Iridium Petition at 5.

[33] *Id.* at 5-6.

[34] Inmarsat Application, Exh. C.

[35] *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and the 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use,* IB Docket No. 98-172, Report and Order, 15 FCC Rcd 13430, 13443 (2000) (*18 GHz Report and Order*).

[36] 47 C.F.R. § 2.106, US334.

[37] *18 GHz Report and Order*, 15 FCC Rcd at 13443.

the 18.3-18.8 and 19.7-20.2 GHz frequency bands at less than two degrees of 55° W.L., these frequency bands are available for use by Inmarsat-5 F2 on a primary basis.

21. *Downlink Requested for Spectrum with No GSO FSS Designation.* In the United States, the 18.8-19.3 GHz band is allocated to the Fixed-Satellite Service (space-to-Earth) on a primary basis, with the non-Federal use limited to NGSO FSS operations by footnote NG165. There is no provision for non-Federal GSO FSS operations.[39] The Commission will grant a waiver of the U.S. Table of Frequency Allocations, Section 2.106 of the Commission's rules, for non-conforming uses "when there is little potential interference into any service authorized under the U.S. Table of Frequency Allocations and when the non-conforming operator accepts any interference from authorized services."[40] Parties seeking authority to operate on a non-conforming basis must request a waiver of Section 2.106, and must demonstrate good cause for that waiver.[41]

22. Inmarsat proposes operations in the 18.8-19.3 GHz band (space-to-Earth) on a non-harmful interference basis relative to other services with superior status in the band. Inmarsat submitted a technical analysis indicating it would not cause interference to O3b Limited and would not have caused interference to two previously authorized systems that never commenced operations. Inmarsat also seeks waivers of the U.S. Table of Frequency Allocations and the Commission's Ka-band Plan.[42] O3b Limited, the only NGSO FSS system with U.S. market access operating in the 18.8-19.3 GHz frequency band, did not file comments in this proceeding, nor did any other commenter address this point. Inmarsat states that it would cease operations in the band in the event of harmful interference into any NGSO operation and would accept interference from any NGSO FSS operations in the band. The Commission has authorized GSO operations in this band where an operator has made such commitments and agrees to accept interference from all operations with superior status, including Federal GSO and NGSO systems.[43] Therefore, we grant Inmarsat's request for a waiver of footnote NG165 to Section 2.106 of the Commission's rules and the Ka-band Plan to permit the Lino Lakes gateway earth station to communicate with Inmarsat-5 F2 on an unprotected, non-harmful interference basis in the 18.8-19.3 GHz (space-to-Earth) frequency band. This grant is conditioned on Inmarsat coordinating its operations in this band in accordance with footnote US334 to the U.S. Table of Frequency Allocations, Section 2.106 of the Commission's rules. Additionally, so as not to constrain the development of currently authorized and

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[38] Inmarsat Application, Technical Annex at 15-16. *See* 47 C.F.R. §§ 25.138. Footnote US255 to the Table of Frequency Allocations, 47 C.F.R. § 2.106, requires that the pfd across the 200 megahertz of the 18.6-18.8 GHz band not exceed -95 dBW/m^2. Inmarsat proposes to operate the Inmarsat-5 F2 space station with a maximum pfd of -118 dBW/m^2/MHz in this band. This level corresponds to a maximum pfd of -95 dBW/m^2/200 MHz. Consequently, Inmarsat-5 F2's proposed operations meet the pfd limit in US255. Inmarsat-5 F2's operations also meet other pfd limits for transmitting Ka-band space stations. *See* 47 C.F.R. §§ 25.138(a)(6), 25.208(c) and 25.208(d), 25.208(e). Inmarsat Application, Technical Annex at 14, 16.

[39] The 18.8-19.3 GHz band is also allocated for Federal GSO and NGSO FSS operations on a primary basis.

[40] Fugro-Chance, Inc. *Order and Authorization*, 10 FCC Rcd 2860, 2860 (Int'l Bur. 1995).

[41] *See WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir, 1969), *Northeast Cellular Telephone Co. v. FCC,* 897 F.2d 1164 (D.C. Cir. 1990); and 47 C.F.R. § 1.3.

[42] Inmarsat Application, Exh. A at 7, 12, and Technical Annex at 42.

[43] *See e.g.*, *contactMEO Communications*, *LLC*, Order and Authorization, 21 FCC Rcd 4035 (Int'l Bur. 2006), and *Northrup Grumman Space and Mission Systems Corp*., Order and Authorization, 24 FCC Rcd 2330 (Int'l Bur. 2009).

future NGSO systems in the 18.8-19.3 GHz band, Inmarsat-5 F2's operations must be in accordance with the technical and operational parameters specified in Inmarsat's application. Accordingly, the 18.8-19.3 GHz frequency band is available for use by Inmarsat-5 F2 on an unprotected, non-harmful interference basis.

23. Inmarsat also requests use of the 17.7-18.3 GHz frequency band. The 17.8-18.3 GHz portion of the band is allocated to terrestrial Fixed Service (FS) on a primary basis for non-Federal use and there is no provision for non-Federal GSO FSS operations in the band.[44] In addition, while the 17.7-17.8 GHz portion of this band is allocated to the Fixed-Satellite Service on a primary basis for non-Federal use, transmissions are restricted to the Earth-to-space direction and this allocation is further limited by footnote US271 to feeder links for Broadcasting-Satellite Service (BSS) space stations. Inmarsat seeks a waiver of the U.S. Table of Frequency Allocations to allow its GSO FSS downlink operations in this band on a non-conforming, non-harmful interference basis.[45] In support of its request, Inmarsat states that its operations in this band would not appreciably change the operating environment for FS receivers.[46] Similarly, Inmarsat states that its operations would not cause harmful interference into the receiver of an adjacent BSS space station.[47]

24. Inmarsat explains that the space-to-Earth transmissions from the Inmarsat-5 F2 satellite at the 55° W.L. orbital location in the 17.7-18.3 GHz frequency band comply with the pfd limits established under Article 21 of the ITU Radio Regulations, established to protect all terrestrial fixed and mobile stations internationally.[48] Inmarsat also notes that while the pfd limits in Section 25.208(e) of the Commission's apply to the 18.8-19.3 GHz frequency band, those limits are instructive with respect to the 17.7-18.3 GHz frequency band and that Inmarsat meets those pfd limits for the 17.7-18.3 GHz frequency band. Therefore, Inmarsat-5 F2's downlink to the Lino Lakes gateway earth station should not present an interference issue for terrestrial operations.[49]

25. Unprotected operations by Inmarsat in this band should not constrain the development of terrestrial services in this band. Nor would they impose any sharing or coordination burdens on terrestrial operations. We note that this waiver is limited to Inmarsat's use of the Lino Lakes gateway earth station for communications with the Inmarsat 5-F2 space station and does not contemplate any other services in the U.S. As previously noted, the pfd on the earth's surface will be below levels established by the ITU to protect terrestrial services. In addition, with respect to operations in the 17.7-17.8 GHz band, Inmarsat demonstrates that the pfd towards the closest authorized U.S. Direct Broadcast Satellite (DBS) Service space station does not exceed the coordination trigger of -117 dBW/m²/100kHz applicable to the

[44] *18 GHz Report and Order*, 15 FCC Rcd at 13445 (2000).

[45] Inmarsat Application, Exh. A at 10. As noted in paragraph 15, in seeking authority to operate in the 17.7-18.3 GHz band on a non-conforming basis, Inmarsat must request a waiver of Section 2.106 of the Commission's rules and demonstrate good cause for the waiver.

[46] Inmarsat Application, Exh. A at 11.

[47] Inmarsat Application, Exh. A at 11, Technical Annex at 24.

[48] ITU Radio Regulations, Article 21.

[49] Inmarsat states that for three gateway emission designators, 2M45G7W, 3M16G7, and 4M78G7W, the greatest EIRP is -6.9 dBW/kHz at the GSO orbit which equates to a pfd on the surface of the Earth of -127.9 dBW/m²/MHz, which is less than the -115 dBW/m²/MHz pfd limit of Section 25.208(e) of the Commission's rules and Article 21 of the ITU-Radio regulations. Inmarsat Application, Technical Annex at 18.

operation of 17/24 GHz broadcasting-satellite service space stations in this band with respect to DBS service space stations.[50] In light of these circumstances, we conclude that Inmarsat's downlink is unlikely to affect other services. We grant Inmarsat a waiver of the U.S. Table of Allocations and the Ka-band Plan to allow the Inmarsat-5 F2 space station to operate with the Lino Lakes gateway earth station in the 17.7-18.3 GHz frequency band. Accordingly, Inmarsat's non-conforming operations in this band are on an unprotected, non-interference basis and at its own risk.

26. Inmarsat also seeks a waiver of the U.S. Table of Frequency Allocations to operate in the 19.3-19.7 GHz frequency band on a non-conforming, non-harmful interference basis.[51] Iridium objects to Inmarsat's use of the 19.4-19.6 GHz band, stating that Iridium's system would be exposed to interference from wide area spot beams encompassing areas where Iridium's earth stations are located, and also spot beams, that – although steerable – may want to focus on areas where Inmarsat's earth stations are located.[52] No fixed service operators filed comments.

27. The 19.3-19.7 GHz frequency band is allocated to the Fixed-Satellite Service (space-to-Earth) on a co-primary basis with the terrestrial fixed service, and footnote NG166 limits non-Federal FSS use of this band to feeder links for the Mobile-Satellite Service. There is no provision for GSO FSS.[53] In the *18 GHz Report and Order* the Commission rejected a proposal to add a co-primary designation for GSO FSS operations in 19.3-19.7 GHz frequency band, explaining that grant of this proposal would be at the "expense of upsetting the overall equity and balance achieved in this Report and Order."[54] In retaining MSS feeder links as a co-primary user in the 19.3-19.7 GHz band, the Commission noted that the Iridium system was successfully coordinated under Part 25 of the Commission's rules, and operates gateway earth stations in the portion of the band.[55] Inmarsat explains that the space-to-Earth transmissions from the Inmarsat-5 F2 satellite at the 55° W.L. orbital location in the 19.3-19.7 GHz frequency band complies with the pfd limits established under Article 21 of the ITU Radio Regulations, established to protect all fixed stations.[56] Inmarsat provided an analysis showing that the likelihood of interference to terrestrial stations is extremely low, but in the event its system causes interference, it will take measures such as turning off offending carriers and operating with EIRP levels that do not cause interference.[57] Further, Inmarsat reiterates that Iridium's system will not be impacted due to the geographic isolation of the Lino Lakes earth station. In light of this analysis we will grant Inmarsat waivers of footnote NG166 in Section 2.106 of the Commission's rules and the Ka-band Plan. We note that this waiver is limited to the Lino Lakes gateway earth station operations, and will not apply to any other earth stations. Further, we do not consider here whether any other type of earth station or geographic location is appropriate for a waiver. Inmarsat has no status in this band.

[50] Inmarsat Application, Attachment A, at 24, and 47 C.F.R. § 25.264(b)(1)(i).

[51] Inmarsat Application, Exh. A at 9.

[52] Iridium Petition, at 6-7.

[53] *18 GHz Report and Order*, 15 FCC Rcd at 13456.

[54] *Id.*

[55] *Id*.

[56] Inmarsat Application, Exh A, at 32-41 (describing sharing with FS in the 17.7-18.3 GHz and 19.3-19.7 GHz Bands).

[57] *Id*.

B. Technical Qualifications – Space Station

28. The Commission's technical criteria for GSO FSS Ka-band space stations is predicated upon two-degree orbital spacing between space stations.[58] This policy permits the maximum use of the geostationary space station orbit.[59] All applicants, including applicants proposing to use non-U.S. space stations to provide service in the United States, must demonstrate that the proposed operations are two-degree compliant.[60] We find that Inmarsat has demonstrated that its proposed operations for Inmarsat-5 F2 will comply with the Commission's two-degree spacing requirements.[61]

C. Additional Waiver Requests

29. *Section 25.202(g)*. Inmarsat states that it will conduct its telecommand operations centered at the 29.494 and 29.468 GHz frequencies. It requests a waiver of Section 25.202(g) of the Commission's rules, which requires FSS systems to operate their tracking, telemetry, and command links at the edges of the frequency bands in which they are providing service. Inmarsat's proposed operations will be 0.006 GHz and 0.032 GHz from 29.5 GHz, which is the band edge for the 29.25-29.50 GHz band. We find that Inmarsat has satisfied the intent of Section 25.202(g), and therefore, no waiver is necessary.

30. *Section 25.114*. Inmarsat requests a waiver of the Commission rules requiring certain beam information to be embedded in the Schedule S form in a .GXT format. Inmarsat states that it is not feasible to embed the large number of .GXT files into the Form 312, Schedule S. Instead, Inmarsat emailed the files and submitted them as a .GXT attachment to the Schedule S. In this instance, we were able to complete our technical review of the antenna gain contour information and therefore grant Inmarsat a partial waiver of Section 25.114(d)(3).[62]

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[58] *Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations,* Report and Order, CC Docket No. 81-704, FCC 83-184, 54 Rad. Reg. 2d 577 (Aug. 16, 1983), *summary printed in* Licensing Space Stations in the Domestic Fixed-Satellite Service, 48 F.R. 40233 (Sept. 6, 1983).

[59] *Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service*, Order and Authorization, 11 FCC Rcd 13788, 13790 (1996).

[60] *Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order and Further Notice of Proposed Rulemaking, IB Docket No. 02-34, 18 FCC Rcd 10760, 10872, ¶ 300 (2003) (*Space Station Licensing Reform Order*); *International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis*, Public Notice, Report No. SPB-207, 19 FCC Rcd 10652 (Int'l Bur., Sat. Div., 2004); Clarification of 47 C.F.R. § 25.140(b)(2), *Space Station Application Interference Analysis*, Public Notice, No. SPB-195, 18 FCC Rcd 25099 (2003).

[61] Inmarsat Application, Technical Annex at 14. This conclusion is applicable to the GSO FSS frequency bands subject to the Commission's two-degree spacing policy.

[62] The Commission recently revised the requirements for the submission of predicted antenna gain contours for transmit and receive antenna beams. Applicants may now submit the information in a GIMS-readable format. 47 C.F.R. § 25.114(c)(4)(vi), effective September 3, 2014. *See Public Notice*, International Bureau Announces the Effective Date of Rules Adopted in the Part 25 Order, IB Docket No. 12-067 (Sept. 3, 2014).

D. Bond

31. Under the Commission's bond requirement, any entity whose "queued" application is granted must execute a bond, payable to the U.S. Treasury, within 30 days of the grant.[63] The bond is payable upon failure to meet any implementation milestone where good cause for extending that milestone is not provided.[64] The amount of the bond may be reduced upon meeting each milestone.[65] Inmarsat has requested that the Commission reduce the amount of its bond from $3 million to $750,000, and provided information demonstrating that it has met the first three milestones for the Inmarsat-5 F2 space station: enter into a binding, non-contingent contract; complete critical design review; and begin construction of the satellite.[66] Importantly, we note that Inmarsat-5 F2 has been launched, and the remaining milestone requires Inmarsat to certify that operations have commenced at the 55° W.L. orbital location. Consequently, as provided in Section 25.165(d), Inmarsat must file a bond in the amount of $750,000 payable the U.S. Treasury within 30 days of the date of this Order. If Inmarsat does not do so, this grant of market access will automatically become null and void.

E. International Coordination

32. In its comments, Eutelsat states that it has higher ITU priority because France submitted a coordination request to the ITU on Eutelsat's behalf, prior to Inmarsat's coordination request submission by the United Kingdom. Based on its ITU priority, Eutelsat suggests that due to the close proximity of its orbital location and that of Inmarsat-5 F2, difficulties with international frequency coordination make it likely that Inmarsat will have to surrender its grant of U.S. market access. Eutelsat requests, therefore, that the Commission conserve administrative resources by declining to grant Inmarsat's application.[67] Alternatively, Eutelsat asks that any grant of market access to Inmarsat include conditions summarized as follows: (i) that in the absence of a coordination agreement with Eutelsat, Inmarsat-5 F2 cease service to the U.S. immediately upon launch and operation of the higher ITU priority satellite or be subject to further conditions to address harmful interference to the satellite with ITU date precedence; and (ii) that earth station licensees communicating with Inmarsat 5-F2 immediately terminate operations that cause harmful interference, and that Inmarsat-5 F2's operations comply with current and future operational requirements as a result of coordination agreements reached with other satellite systems.

33. The U.S. is not the filing administration for either the Inmarsat or the Eutelsat satellite network. Neither Inmarsat nor Eutelsat indicates that its Administration has successfully completed coordination of its system.[68] Under the circumstances, we decline to specify detailed

[63] In the *DISCO II Order*, the Commission stated that it would apply its financial rules to non-U.S. satellites seeking to serve the U.S. market. *DISCO II Order*, 12 FCC Rcd at 24162. The Commission subsequently eliminated the financial requirements and replaced them with a bond requirement. *Space Station Licensing Reform Order*, 18 FCC Rcd at 10826-27, and 47 C.F.R. § 25.165.

[64] *Space Station Licensing Reform Order,* 18 FCC Rcd at 10826-27.

[65] *Id.*

[66] Supplement to Application of Inmarsat Hawaii, Inc. IBFS File Nos. SES-LIC-20120426-00397 and SES-AMD-20120823-00781; Request for Determination of Compliance with Satellite Implementation Milestones and Bond Reduction, filed April 15, 2013.

[67] Eutelsat Comments at 2.

[68] Our review of Inmarsat's and Eutelsat's ITU filings confirm that the Eutelsat satellite network at 55.2° W.L. for the 17.7-20.2 GHz and 27.5-30.0 GHz frequency bands has an earlier protection date than the Inmarsat satellite (continued….)

conditions concerning possible scenarios that may arise if the two operators and their respective Administrations do not complete coordination. Although we have in some instances provided more detailed conditions,[69] we see no reason to do so in this case. Rather, this matter should be addressed by the two Administrations involved. We expect the operators to work in good faith to resolve any issues preventing completion of coordination. In accepting our grant of market access, Inmarsat bears the risks inherent in the international coordination process. We understand that regardless of the conditions in this grant of market access, Inmarsat will also adhere to any conditions resulting from coordination agreements with other satellite networks.[70]

F. Other Public Interest Issues

34. Under *DISCO II*, the public interest analysis for considering non-U.S. satellite access to the U.S market includes issues of national security, law enforcement, foreign policy and trade policy when Executive Branch agencies bring them to our attention. No commenters have filed on this issue. In its application, however, Inmarsat requests that its gateway earth station authorization include a condition pertaining to an existing network security agreement between Inmarsat and the U.S. Department of Justice and the Department of Homeland Security.[71] We have included this condition pursuant to Inmarsat's request.

G. DISCO II Analysis – Conclusion

35. As provided above, Inmarsat is granted market access for the Inmarsat-5 F2 space station to communicate with its Lino Lakes gateway earth station.[72] In its application, Inmarsat explained in general terms that it intended to provide services for which the Commission has yet to adopt rules.[73] For such services, Inmarsat, or a reseller of its services, will file additional earth station license applications in the future providing technical details of proposed operations.[74] As a result, our grant of market access does not address such potential future services.

(Continued from previous page)
network at 55 W.L. for the same frequency bands at the nominal 55° W.L. orbital location. *See* ITU filing for MM 60W, ITU reference number API/A/5457 received December 9, 2008, and MM 55.2, API/A/5457M1, received October 19, 2009, CR/C/2480 received October 19, 2009; and for Inmarsat-Ka55, API/A/5756 received July 8, 2009 and CR/C/2558 received January 15, 2010. Nonetheless, we note that Inmarsat-5 F2 was launched February 1, 2015. Eutelsat did not specify a launch date or plans for a particular space station to operate from 55.2° W.L. before its bringing into use date of December 9, 2015.

[69] *See* Star One S.A., *Order on Reconsideration*, 23 FCC Rcd 10896 (Int'l. Bur., Sat. Div., 2008).

[70] *See Amendment of the Commission's Space Station Licensing Rules and Policies*, IB Docket No. 02-34, First Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 10760, 10870-71 (2003).

[71] Inmarsat Application, Exh. A at 14.

[72] Inmarsat did not request inclusion in the Commission's Ka-band Permitted List. *2006 Biennal Review – Revision of Part 25 Establishment of a Permitted List Procedure for Ka-Band Space Stations*, Declaratory Order, 25 FCC Rcd 1542 (2010), and *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, IB Docket 12-267, Report and Order, 28 FCC Rcd 12403, 12409 n. 20 (2003) (noting that operators must specifically request inclusion in the list).

[73] *See* footnote 11, *supra*.

[74] Inmarsat Application, Exh. A at footnote 3.

H. Gateway Earth Station Application

36. Having completed the analysis for the Inmarsat-5 F2 space station, we now review the technical aspects of Inmarsat's gateway earth station application. Based upon our review of the application, and subject to the conclusions above regarding spectrum availability, we find that the proposed FSS antennas comply with our policies and technical rules including the two-degree spacing technical standards. Accordingly, we authorize the Lino Lakes gateway earth station to communicate with the Inmarsat-5 F2 space station using the 17.7 -20.2 GHz (space-to-Earth) and 27.5-30.0 GHz (Earth-to-space) frequency bands.

37. *Section 25.138(d) Information Waiver*. Section 25.138(d) of the Commission's rules requires Ka-band earth station applicants to provide a series of radiation patterns measured on a production antenna performed on a calibrated antenna range. Inmarsat seeks a limited waiver of the rule, because it instead filed exemplary antenna patterns produced by the manufacturer for this type of antenna that demonstrates that the antenna complies with the Section 25.209 of the Commission's rules. Inmarsat further states that, because the uplink power density of the Lino Lakes gateway antenna is -70.0 dBW/Hz and the antenna complies with the masks in Section 25.209, compliance with Section 25.138 is ensured. Inmarsat notes, however, that the sample patterns are not based on actual measurements of a sample antenna, do not include elevation plane patterns, and do not include patterns at the middle of the frequency range or main beam patterns plotted to 10 degrees. Inmarsat states that Section 25.138(d) was intended to address blanket licensing of small, mass produced antennas. A strict application of the rule here is not necessary, Inmarsat maintains, because its antenna is 13.2 meters in diameter and will be constructed on-site and mechanically aligned on-site before testing begins. We agree with Inmarsat the sample patterns it submitted are sufficient to show that the antenna will comply with the Commission's technical rules. To ensure that the antenna is operating properly, however, we require Inmarsat to conduct the antenna pattern tests as required by Section 25.132(c) of the Commission's rules, and make the results available to the Commission upon request. This, and other conditions specific to the earth station's operations, are set forth in the earth station authorization.[75]

IV. CONCLUSION AND ORDERING CLAUSES

38. Based on the foregoing, we grant, subject to conditions, Inmarsat Mobile Networks, Inc. applications, IBFS File Nos.SES-LIC-20120426-00397, SES-AMD-20120823-00781, and SES-AMD-20150114-00008, for U.S. market access to operate a gateway earth station at Lino Lakes, Minnesota.

39. Accordingly, IT IS ORDERED that the Petition to Deny filed by Iridium Satellite LLC is DENIED.

40. IT IS FURTHER ORDERED that the request of Eutelsat S.A., for the Commission to condition or decline to grant Inmarsat's application for U.S. market access, made in comments filed January 26, 2015, is DENIED.

41. IT IS FURTHER ORDERED that, pursuant to Sections 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 303(r), and Sections 0.261, 0.31, 0.241, and 25.137(a) of the Federal Communication Commission's rules, 47 C.F.R. §§ 0.261, 0.31, 0.241, and 25.137(a), the request of Inmarsat Mobile Networks, Inc. IBFS File Nos.SES-LIC-20120426-00397, SES-AMD-20120823-

[75] *See* footnote 1 *supra.*

00781, and SES-AMD-20150114-00008 IS GRANTED, and the Inmarsat-5 F2 space station, IS DECLARED ELIGIBLE for use with a gateway earth station at Lino Lakes, Minnesota (Call Sign E120072) using the 17.7-20.2 GHz (space-to-Earth) and 27.5-30.0 GHz (Earth-to-space) frequency bands pursuant to the technical specifications set forth in its application. This action is subject to the terms of the earth station license released contemporaneously with this Order, the Commission's rules not waived herein, the technical specifications set forth in the application, and the following conditions:

a. Inmarsat-5 F2 may not provide Direct-to-Home (DTH) service, Direct Broadcast Satellite (DBS) or Digital Audio Radio Service (DARS) to, from, or within the United States.

b. Inmarsat-5 F2 must be maintained within an east-west longitudinal station-keeping tolerance of ± 0.05 degrees of the 55° W.L. orbital location.

c. Inmarsat shall comply with all coordination agreements reached between the United Kingdom and other Administrations, including all coordination agreements reached between the United Kingdom and the United States.

d. Inmarsat-5 F2's operations in the 27.5-28.35 GHz and 28.6-29.1 GHz (Earth-to-space) bands shall be on a secondary basis. Inmarsat shall not cause harmful interference to any station authorized to operate on a primary basis in the 27.5-28.35 GHz and 28.6-29.1 GHz bands, must accept any interference from these stations, and must terminate operations immediately upon notification of harmful interference.

e. Inmarsat's operations in the 29.1-29.25 GHz band shall be on a non-interference basis to MSS feederlink and LMDS operations. Inmarsat must cease operations in the event of any interference into LMDS or MSS feeder link operations. In addition, Inmarsat may not claim interference protection from LMDS or MSS feeder link operations in this frequency band.

f. Inmarsat-5 F2's operations are subject to compliance with the provisions of the Agreement between Inmarsat on the one hand and the U.S. Department of Justice (DOJ) and the Department of Homeland Security (DHS) on the other, dated September 23, 2008, as amended.

42. IT IS FURTHER ORDERED that this grant of market access is based on a finding that Inmarsat is and will be subject to direct and effective regulation by the United Kingdom concerning orbital debris mitigation. This grant of market access for the Inmarsat-5 F2 satellite will become effective and remain effective only to the extent that launch and space operations are authorized by the United Kingdom Space Agency under the United Kingdom Outer Space Act. Inmarsat must file evidence in the public record of this proceeding demonstrating grant of any such authorization within 10 business days of the release of this Order.

43. IT IS FURTHER ORDERED that Inmarsat's request for a waiver of footnote NG165 to Section 2.106 of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, to permit operations in the 18.8-19.3 GHz frequency band (space-to-Earth) is GRANTED. As a non-conforming user, Inmarsat must accept any interference from any current or future non-Federal NGSO FSS system, any current or future Federal GSO FSS or NGSO FSS system, or any grandfathered co-primary fixed service stations authorized to use the 18.8-19.3 GHz frequency band. In addition, Inmarsat shall not cause harmful interference to any current or future authorized non-Federal NGSO FSS system, any current or future Federal GSO FSS or NGSO FSS system, or any grandfathered co-primary fixed service stations. Operations in the

18.8-19.3 GHz frequency band shall immediately cease upon notification of such harmful interference.

44. IT IS FURTHER ORDERED that Inmarsat's request for a waiver of Section 2.106 of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, to permit operations in the 17.7-18.3 GHz band, including a waiver of footnote US271 to Section 2.106 to permit operations in the 17.7-17.8 GHz band, is GRANTED. Inmarsat's operations in these bands are on an unprotected, non-harmful interference basis, that is Inmarsat must not cause harmful interference to any authorized users, nor can Inmarsat claim protection from harmful interference caused by any authorized users. The grant of this waiver is limited to the Lino Lakes gateway earth station's operations with the Inmarsat-5 F2 space station.

45. IT IS FURTHER ORDERED that Inmarsat's request for waiver of Section 2.106 of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, footnote NG166 to use the 19.3-19.7 GHz band is GRANTED. Inmarsat's operations in these bands are on an unprotected, non-harmful interference basis, that is Inmarsat must not cause harmful interference to any authorized users, nor can Inmarsat claim protection from harmful interference caused by any authorized users. The grant of this waiver is limited to the Lino Lakes gateway earth station's operations with the Inmarsat-5 F2 space station.

46. IT IS FURTHER ORDERED that Inmarsat must coordinate its space-to-Earth operations in the 17.7-20.2 GHz frequency bands with the U.S. Federal Systems, including Federal operations to earth stations in foreign countries, in accordance with footnote US334 to the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106.

47. IT IS FURTHER ORDERED that the power flux-density at the Earth's surface produced by the emissions from the Inmarsat-5 F2 space station for all atmospheric conditions, and for all methods of modulation in the 17.7-20.2 GHz (space-to-Earth) frequency band must not exceed a level of -118 $dBW/m^2/MHz$ at any angle of arrival.

48. IT IS FURTHER ORDERED that Inmarsat-5 F2's operations in the 29.25-29.5 GHz frequency band must comply with Section 25.258 of the Commission's rules. 47 C.F.R. § 25.258.

49. IT IS FURTHER ORDERED that Inmarsat's request for a partial waiver of Section 25.114(d)(3) of the Commission's rules, 47 C.F.R. § 25.114(d)(3) IS GRANTED.

50. IT IS FURTHER ORDERED that authority for the Lino Lakes gateway earth station to transmit to and receive transmissions from the Inmarsat-5 F2 space station shall be null and void, with no further action on the Commission's part unless the Inmarsat-5 F2 space station is placed into operation in accordance with the milestone schedule in Section 25.164 and the bond requirement in Section 25.165 of the Commission's rules following the date of grant, as follows:

a. Inmarsat Mobile Networks must file a bond with the Commission in the amount of $750,000 pursuant to the procedures set forth in 47 C.F.R. § 25.165 within 30 days of the date of this grant (April 29, 2015).

b. Commence operations within two years (March 30, 2017).

51. Inmarsat is afforded 30 days from the date of this action to decline this order and authorization and declaratory ruling, as conditioned. Failure to respond within this period will constitute formal acceptance of the grant, as conditioned.

52. Petitions for Reconsideration under Section 1.106 or applications for review under Section 1.115 of the Commission's rules, 47 C.F.R. §§ 1.106, 1.115, may be filed within 30 days of the release of this Order.

FEDERAL COMMUNICATIONS COMMISSION

Jose P. Albuquerque
Chief, Satellite Division
International Bureau

Mark Settle
Chief, Policy and Rules Division
Office of Engineering and Technology